



US005966648A

United States Patent [19]

Ortberg et al.

[11] **Patent Number:** 5,966,648[45] **Date of Patent:** Oct. 12, 1999[54] **RF CIRCUIT MODULE AND CHASSIS INCLUDING AMPLIFIER**[75] **Inventors:** Todd Charles Ortberg, Chanhassen; Zakhary Bluband, Plymouth; Glen Backes, Edina, all of Minn.[73] **Assignee:** ADC Telecommunications, Inc. Minnetonka, Mich.[21] **Appl. No.:** 08/988,047[22] **Filed:** Dec. 10, 1997[51] **Int. Cl.** ⁶ **H04B 1/08**[52] **U.S. Cl.** **455/347; 455/6.2; 455/349; 455/341; 361/752**[58] **Field of Search** 455/6.2, 90, 347, 455/348, 349, 575, 341, 351; 361/733, 752, 785, 796, 801, 802, 814, 816; 174/358; 439/61, 610, 668[56] **References Cited****U.S. PATENT DOCUMENTS**

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An amplifier module for radio frequency signal circuits includes an electrically conductive housing. Two coax connectors are electrically linked to an amplifier circuit contained within the module. A separate transformer is external to the module. Both the module and the external transformer are mountable to a chassis frame. Other modules are usable in the system in addition to the amplifier module. The transformer can be wall mounted to the chassis frame, or the transformer can be internal to a module which also mounts to the chassis frame.

9 Claims, 12 Drawing Sheets